

Quick Summary of Lassen Volcanic NP GRI meeting September 28, 2000

Summary

A geologic resources inventory workshop was held for Lassen Volcanic NP (LAVO) on September 28, 2000 to view and discuss the park's geologic resources, to address the status of geologic mapping for compiling both paper and digital maps, and to assess resource management issues and needs. Cooperators from the NPS Geologic Resources Division (GRD), NPS Lassen Volcanic NP and United States Geologic Survey (GS) staff were present for the workshop.

This involved a full-day field trip to view the geology of the Lassen Volcanic NP area led by Bob Christiansen and Mike Clynne (both USGS) and a separate scoping session to present overviews of the NPS Inventory and Monitoring (I&M) program, the Geologic Resources Division, and the on-going Geologic Resources Inventory (GRI). Round table discussions involving geologic issues for Lassen Volcanic NP included interpretation, general resource management, and the status of geologic mapping efforts, sources of available data, geologic hazards, and action items generated from this meeting.

Attendees

For a list of attendees, please see the attendance list on the last page of this document.

Producing a Geologic Database

The USGS has been refining mapping in the Lassen Volcanic center for several years. Their purpose was to complete geologic mapping of the area (> 30 quadrangles) at 1:24,000 scale and to improve on the existing 1:62,500 scale coverage. Both Mike Clynne and Bob Christiansen have been involved in this endeavor for several years. They estimate 98% of the field work to be complete at this time. Mike Clynne is currently working on map unit descriptions and correlations, and Patrick Muffler and Dave Ramsey are assembling a digital database. At present, no geologic cross sections are included. It was also suggested that the NPS contact Dave Ramsey to receive the ArcInfo digital geologic coverages of the 40-some quadrangles.

Additionally, there will be a short (~10 pages) textual description of the regional geologic setting and processes, but this will probably not be sufficient to cover the numerous NPS "report checklist" items, and a more in-depth summary will be necessary. The NPS would like a full report that covers the bullet items addressed in a general report outline, much like the distributed USGS Professional Paper 1616 on Wrangell St. Elias ("***A Geologic Guide to Wrangell-St. Elias National Park and Preserve, Alaska***"). It was suggested that Kathy Janik (USGS) could be such a person to put together such a folio for LAVO.

The USGS plans to publish a "***Geologic Map for Lassen Volcanic NP and vicinity***" and compile the multitude of 1:24,000 scale maps at 1:50,000 scale. The USGS has published a few of the quadrangles as Open File reports, but are not sure how other individual quadrangles will be published at this point in time. They hope to have the 1:50,000 scale final published product out within 1-3 years. They thought this could be

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accelerated if enough external interest was generated (i.e an "official" NPS request to the USGS to complete the publication). Also, it was suggested to contact Terry Keith to make sure the USGS has adequate funding to publish the database.

The USGS is willing to supply the NPS with ArcInfo coverages for the Lassen area immediately. Their only stipulation is that the data should only be used "internally" until this work is officially released as a USGS publication. The NPS can have access to this data immediately, and should contact Dave Ramsey and Patrick Muffler to obtain it.

The methods of attribution of geologic features is not yet known, but Bob Christiansen thought it would be quite easy to parse features such as faults into a separate fault coverage.

Geologic Hazards

Brokeoff Mountain has high potential for landslides, and several square miles are already covered by landslide material.

Also, it was noted that geothermally altered areas pose a higher risk for rockfalls and landslides. However, the USGS says that these areas are not part of any hazard assessment currently underway. Rocky Crandell talked about this in past publications too.

Other desired information on LAVO geology

A comprehensive Soils map is of interest to LAVO staff. Pete Biggam (NPS-Soil Scientist) mentioned that the NRCS will conduct a survey for LAVO in 2002.

Mike Clynne has a database of rock analyses that has latitude and longitude coordinates that could be incorporated into the LAVO geologic database. He also says that Geophysical (both aeromagnetic and gravity) databases exist.

LAVO Mudflow hazards were written up in a report done in 1984-ish; should be consulted. KGRA (known geothermal resource area) data is also part of this; USGS has this data.

Surficial geology and glacial features should be part of a comprehensive geologic database. A glacial mapping initiative was suggested to refine the work of Kane, who mapped some glacial deposits in LAVO.

Baseline inventory/monitoring should be a priority for the Bumpass Hell geothermal area and other areas outside of the park

Interpretation

The USGS has an excellent website devoted to volcanoes at:
<http://volcanoes.usgs.gov>

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Mike Clynne has produced several USGS fact sheets regarding Lassen Volcanic NP and volcano hazards in general; they are available at <http://volcanoes.usgs.gov/Products/sproducts.html#fs>

It was suggested to improve the LAVO geology portion of their website. Melanie Moreno (USGS) began working on LAVO page but didn't get very far.

Miscellaneous

It was suggested that the supplied field trip guide should be open-filed after some internal USGS review. Yesterday's road-guide is semi-published from two references in the fieldguide and would make a great PDF on the LAVO geology web pages.

Mike Clynne distributed his version of a LAVO bibliography to the group to supplement the one supplied to LAVO staff by GRD.

LAVO is currently searching for a GIS specialist. Craig Dalby (NPS-CCSO) is helping them out with this. The position will be graded as a 7-9-11 series.

Louise Johnson (LAVO) is concerned about water quality as Lost Creek had debris flows that contributed sediment thus affecting downstream communities. There have also been high mercury contents in some soils.

Bob Christiansen and Mike Clynne have a "wish list" for the park including:

1. Volcano Hazards Assessment report.
One was completed in 1970 by the USGS, but should be updated because of new research. Also, a publication on the 1915 eruption and the Chaos Crags area would be useful as it would be able to be used by multiple land agency managers and stake holders in the LAVO area.
2. A comprehensive geologic report on LAVO geology modeled after Bob Christiansen's Yellowstone NP professional paper; again much like the existing Wrangell-St. Elias professional paper. Mike Clynne says the existing publication "***Through Vulcan's Eye***" by Kane, while good, is inaccurate in places and needs updating. Lassen has a rich history of geologic exploration and this should be covered in a publication.
3. The LAVO glacial story needs to be better studied and showcased. A glacial geologist would be needed to work on it; perhaps this could be combined with the soil survey.
4. Geochronology publication as a journal publication

All 4 topics should be written up in action plans on the Friday September 30th meeting.

Lassen Volcanic NP
Geological Resources Inventory Workshop Invitees/Participants
September 28, 2000

NAME	AFFILIATION	PHONE	E-MAIL	Field Trip	Scoping Session
Bruce Heise	NPS, Geologic Resources Division	(303) 969-2017	Bruce_Heise@nps.gov	<u>X</u>	<u>X</u>
Tim Connors	NPS, Geologic Resources Division	(303) 969-2093	Tim_Connors@nps.gov	<u>X</u>	<u>X</u>
Sid Covington	NPS, Geologic Resources Division	(303) 969-2154	Sid_Covington@nps.gov	<u>X</u>	<u>X</u>
Bob Higgins	NPS, Geologic Resources Division	303-969-2018	Bob_higgins@nps.gov	<u>X</u>	<u>X</u>
Marsha Davis	NPS, Pacific West Region	206-220-4262	Marsha_Davis@nps.gov	<u>X</u>	<u>X</u>
Lindsay McClelland	NPS, Geologic Resources Division	202-208-4958	Lindsay_McClelland@nps.gov	<u>X</u>	<u>X</u>
Jon Arnold	NPS, Lassen Volcanic NP	530-595-4444	Jonathan_Arnold@nps.gov		<u>X</u>
Louise Johnson		530-595-4444 ext.5170	Louise_Johnson@nps.gov	<u>X</u>	<u>X</u>
Michael Clynne	USGS, Menlo Park CA	650-329-5236	Mclynne@usgs.gov	<u>X</u>	<u>X</u>
Bonnie Murchey	USGS, Menlo Park CA	650-329-5101	Bmurchey@usgs.gov	<u>X</u>	<u>X</u>
Bob Christiansen	USGS, Menlo Park CA	650-329-5201	Rchris@usgs.gov	<u>X</u>	<u>X</u>